

Mr Tek's TBMA-TFSI Pure**Introduction**

Mr Tek's TBMA-TFSI Pure is a high purity antistatic additive compatible with a variety of high performance polymer systems, including thermoplastic resins and thermosets. Antistat TBMA-TFSI is optically clear and has low metal and halogen ions, which makes it ideal for electronics, display and semiconductor applications. Outstanding thermal stability, low water content and negligible volatility allow Antistat TBMA-TFSI to be readily melt processed with high melting engineering resins.

Features and Benefits

- Optical clarity
- Low metal and halogen ions
- Stable antistatic performance over a wide humidity range
- Static dissipation in a wide variety of polymers with typical resistivities of 109 to 1012 ohms/sq
- Thermal stability – trigger temperature by TGA of 340°C
- Wide liquid range for ease of handling in production
- Hydrophobic

Advantages**Electrostatic Performance Plus Optical Clarity**

Antistat TBMA-TFSI provides excellent static dissipation performance to polymers at relatively low loadings. Typical surface resistivities in polymer formulations range from 109 to 1012 ohms/sq. Antistat TBMA-TFSI is colorless and highly soluble in organic media making it ideal for use in a wide variety of polymer systems where optical clarity is critical.

Ease of Manufacturing and Thermal Stability

Antistat TBMA-TFSI is a liquid above 27°C (m.p.), but it is nonflammable and has negligible vapor pressure at elevated temperatures. The thermal trigger temperature by TGA is 340°C, making Antistat TBMA-TFSI ideal for use in high temperature polymer melt processing and injection molding applications. Its wide liquid range also simplifies material handling in production.

Material Description

Name: tri-n-butylmethylammonium bis-(trifluoromethanesulfonyl)imide

Formula: (n-C4H9)3(CH3)N+ -N(SO2CF3)2

Appearance: Clear colorless liquid or white crystalline solid

Specifications

Assay > 99.0%

Color, APHA < 100

Residual Water < 500 ppm

Physical Properties

Note: The following technical information and data should be considered representative or typical only, and should not be used for specification purposes.

Properties	Mr Tek's TBMA-TFSI Pure
M.P.	27.5°C
Solubility in water @ 23°C	~765 ppm by wt
Vapor Pressure	Essentially none below the decomposition temperature
Specific Gravity (25°C)	1.26 g/mL
Volatiles (by wt)	< 0.1%
pH	~5.0 (neutral)
Viscosity @ 25°C	500 cP (supercooled)

Mr Tek's TBMA-TFSI Pure

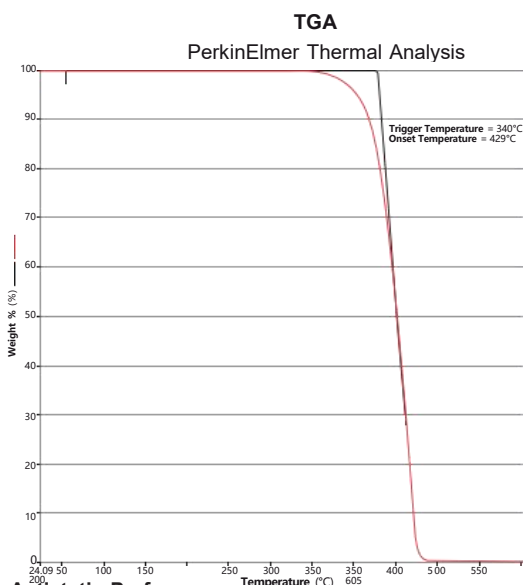
Thermal Properties

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DSC

PerkinElmer Thermal Analysis

Area = 186.391 mJ



Antistatic Performance

Performance of Antistat TBMA-TFSI in Optically Clear Poly-Acrylate Based PSA1

FC-4400 Loading (wt%)	Surface Resistivity ²	Durability (72 hr) ³
5%	1.2 x 10 ¹⁰ Ω/sq	Good
2.5%	4.8 x 10 ¹⁰ Ω/sq	Good
0%	1 x 10 ¹⁴ Ω/sq	—

¹ PSA is Pressure Sensitive Adhesive

² Measured according to ASTM D257, at 23°C and 23% relative humidity.

³ Durability test: A laminated sample of adhesive was placed in an oven maintained at 65°C and 90% relative humidity for up to one week.

The sample was occasionally removed from the oven and visually inspected for defects. If no defects were observed, the

Performance of Antistat TBMA-TFSI in Optically Clear, UV-Cured Poly-Acrylate Coating*

Wt%TBMA-TFSI	Log Surface Resistivity (Ω/sq)
0	11.1
1	10.5
5	9.7

*Customer data

Performance of Antistat TBMA-TFSI in Melt Processed Polyvinylidene Fluoride (PVDF)

Wt%TBMA-TFSI	5KV Positive Static Discharge Time (sec) to 10%	5KV Negative Static Discharge Time (sec) to 10%
1	3.1	3.2
3	0.05	0.04
5	0.04	0.03

Static discharge times measured under ambient conditions.

Performance of Antistat TBMA-TFSI in Melt Processed Polycarbonate (PC)*

Wt%TBMA-TFSI	Surface Resistivity (Ω/sq)
0	4 x 10 ¹⁶
3	1.9 x 10 ¹³
4	4.0 x 10 ¹²
5	3.3 x 10 ¹²

*Customer data

Applications

Mr Tek's TBMA-TFSI Pure can be used as an antistatic additive in thermoset or thermoplastic resins. In thermosets, Antistat TBMA-TFSI is typically dissolved in the monomer or oligomer mixture prior to curing with heat or light. In thermoplastics, the Antistat TBMA-TFSI is typically melt-processed with the resin in an extruder. Due to its exceptional thermal stability, melt processing of Antistat TBMA-TFSI is possible even with certain high temperature engineering resins. Generally, concentrations of Antistat TBMA-TFSI between 1 – 10 wt% in the final resin are effective at dissipating static charge.

Product Handling and Shelf Life

TBMA-TFSI has a shelf life of at least 2 years and Mr Tek will warrant the product specifications for this period from date of manufacture for material in unopened and properly stored containers. This product is a crystalline solid at normal room temperature, but is readily melted by heating in original package above its melting point (27.5°C) at a temperature of 30 - 60°C in an oven or temperature controlled room. Once liquid, the product has a tendency to supercool and will therefore typically remain liquid for a period of days to weeks in original container at room temperature (~ 20°C). Antistat TBMA-TFSI is available in 1 gallon bottles (10 lb, 4.5 kg), 5 gallon pails (44 lb, 20 kg) or 55 gallon drums (496 lb, 225 kg). 1.0 lb (453 g) sample sizes are also available. Please refer to the Antistat TBMA-TFSI Safety Data Sheet (SDS) for instructions on safe and proper handling and disposal of this product.